

LA-UR-21-20539

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Title: Installation of Ramps and Utility Cabinet at TA-18-1 Slotin Building

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Intended for: Report

Issued: 2021-05-18 (rev.1)

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Installation of Ramps and Utility Cabinet at TA-18-1 Slotin Building

Los Alamos National Laboratory

Historic Building Report No. 395

Survey No. 1211



Prepared for: the U.S. Department of Energy/National Nuclear Security Administration,
Los Alamos Field Office

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Introduction

The information below is presented in response to requests for additional information that resulted from a phone conference on November 12, 2020 between Harvey Kaplan of the New Mexico State Historic Preservation Office, DOE NNSA Los Alamos Field Office Manhattan Project National Historical Park Representative, Vicki Loucks, LANL Program Manager for Manhattan Project National Historical Park, Cheryl Abeyta, and LANL Historic Buildings Program Staff, Jeremy Brunette and J.T. Stark.

The DOE NNSA Field Office (Field Office) initiated the call to propose additional work be performed to a previously reviewed project, “Restoration of TA-18-0001 (Slotin Building)” (LA-UR-19-26609) (HPD Log # 111110). Of the six actions discussed on the call, which included (1) exterior paint color, (2) entrance ramps, (3) non-period metal siding removal, (4) interior floor finish, (5) reopening secondary entrance door, and (6) addition of utility cabinet with period doors, additional information for two of the actions was requested for further review. The two actions, the construction of entrance ramps and installation of a utility cabinet are addressed in detail below.

Description of Potentially-affected Property

The high bay building that we refer to today as the Slotin Building was constructed in 1946 as an addition to the existing TA-18-1 laboratory (now gone) that housed an electronics laboratory, shop space, and a photochemical laboratory. This laboratory building was constructed in 1944 and was larger than the high bay building. Workers in the original building conducted electronics assembly and radiation counting experiments likely in support of G-3 Group’s use of Pajarito Canyon as a proving ground for the magnetic method of studying implosions.

In April of 1946, Pajarito Laboratory was transferred to the M-12 Group, which was the Critical Assemblies Group, and became the main site for critical assembly work. This decision was made as a direct response to the Harry Daghlion accident at Omega Site in 1945. The high bay building was outfitted to conduct critical assemblies by hand until the Louis Slotin accident happened in May of 1946. After this second accident, all critical assembly operations were paused until safer facilities could be constructed.



Figure 1. Historic View of TA-18-1. North and west elevations of the Slotin Building (high bay building) are visible.

Description of Proposed Work

Entrance Ramps

The Field Office proposes the addition of two entrance ramps leading from the ground surface to the east (yet to be constructed) and west elevation entryways. While ramp designs are preliminary at this stage of planning, the aim is to construct ramps consistent with historic designs, but recognizable as new construction. Construction material would consist primarily of wood and measurements would be approximately 15' 0" x 5' 0". The proposed dimensions and material of construction is in accordance with original plans (Enclosure A).

Considerations for improving safety and ADA/ABA accessibility will dictate forthcoming designs from LANL architects. Currently the slope around the building prohibits ramp construction consistent with historic dimensions. At current elevation, each ramp would be well over 20 feet in length to achieve a 1:12 slope. Further design efforts to the ramps and the surrounding grade will address this issue to realize full compliance with ADA/ABA.

The grade surrounding the Slotin Building does not presently represent the historic grade. This is due to numerous factors that include Cold War development and demolition of nearby buildings, and the addition of asphalt paving around and immediately adjacent to Slotin Building. In order to achieve a suitable grade for the entrance ramp installation, it may be required to remove existing asphalt around the building, and add earthen fill. Asphalt paving does not fall in line with the historic character of the site during its period of significance, and its removal would be beneficial to overall character and feel of the building exterior. Historic photography (Figure 1) indicates that the area surrounding the Slotin Building was dirt during the period of significance. A neutral color crusher fine that blends well with the surrounding dirt would replace the asphalt where removed to prevent soil erosion and muddy conditions during rain and snow events while also keeping in line with the historic character of the site.

Likewise, the Field Office intends to reduce the original slope of the ramps and to construct a handrail system on both sides of the two ramps (Enclosure B: Sheet SK-2). While the wooden handrails will not fall within the original design concept, the Field Office has confidence that a handrail system can be designed and installed in a manner consistent with the historic character of the building considering other Manhattan Project buildings had similar railings (Enclosure B: Sheet SK-2).

The reestablishment of entrance ramps leading to the two entries will not only return architectural elements central to the exterior character of the building, but will also offer greater opportunity for visitor accessibility as future tour opportunities increase at the site. The original ramps undoubtedly functioned to provide ease of access, especially for moving large equipment into and out of the building. The proposed ramps for this project will essentially meet a similar function of easing the approach to the building for heavy tour equipment, as well as for many of the people taking the tours.

Reconstruction of Period Doors and Utility Cabinet

In addition to the installation of two entrance ramps, the Field Office proposes to install a utility cabinet in the east corner of Slotin Building. At present, non-period utility lines cover many of the interior surfaces throughout the building. As part of the parent project referenced in the introduction, many of these utility lines will be removed or rerouted to a more centralized location. One example is the electrical panel that can be seen in the *3D Rendering Facing East* detail (Enclosure B: Sheet SK-1). The Field Office intends to redirect necessary utilities to a central location on the east portion of the north wall.

This centralized location offers an exceptional opportunity to not only consolidate utilities, but to also return an important character-defining feature to the interior of the building. During the Slotin accident, a pair of doors led to a buried tunnel connecting the Slotin Building with another building (since razed). This opening was subsequently infilled with concrete masonry unit (CMU) blocks, and the area was used for mounting communication wiring and distribution lines.

Original construction drawings indicate the dimensions and basic design of the two doors (Enclosure A). This information will be used to guide the reconstruction of the doors and to provide access to a furred-out utility cabinet (Enclosure B: Sheet SK-1). The construction of a utility cabinet will serve to hide unsightly utilities while also providing an opportunity to exhibit the doors – architectural elements important to the story of the Slotin Building. This action will allow for better interpretation of the Slotin Accident, which is the reason that the building is a part of the Manhattan Project National Historical Park.

Area of Potential Effect

The area of potential effect (APE) occurs within the Slotin Building and its immediate surroundings. The exterior construction footprint will be limited to the east and west elevation entryways and the areas of regrading. The existing stairs, wooden landing, and cover will be removed. Visual changes as a result of the installation of the ramps and handrails are expected for individuals entering the building, accessing TA-18 via vehicle, and also for those traveling along the Pajarito Corridor directly above and within a few tenths of a mile east of Slotin Building and TA-18. The addition



Figure 2. Slotin Building, TA-18-1, Facing East. West entryway exhibits modern wooden steps and landing. Deteriorating asphalt surrounds the building.

of the ramps and crusher fines due to regrading will offer an initial visual impact for individuals accustomed to the current configuration. However, this will pass with time, as the public learns of the historical presence of the ramps to both sides of the building.



Figure 3. Northeast Interior of Slotin Building, TA-18-1. Non-historic utility lines will be removed.

The interior placement of the utility cabinet also results in a visual impact, but also allows for the concealment of modern utility equipment and the opportunity to return an important architectural element that helps to interpret the building. Non-historic utility lines along the east portion of the north interior wall that are no longer needed will be removed. Utilities required to support visitation will be relocated closer to the northeast corner and screened with an accessible utility cabinet. The visual impact of the cabinet will be seen from every point in the building, however, the addition of period doors for accessing utilities will help unify this area with the historic nature of the rest of the building.

Determination of Potential Effect

The installation of two entrance ramps leading to the entrance doors will return visually prominent and useful architectural features to the Slotin Building. Original architectural drawings will allow the Field Office to reconstruct the ramps to the approximate measurements. Grading limitations may alter the length of both ramps in response to current ground slope and modern accessibility requirements of 1:12 slope. Period photography indicates that the ramps were constructed from wood, which will be the case for this new construction.

Although not original to the initial construction, the Field Office recommends the addition of a wooden rail system on both sides of the ramps. This will help to prevent injury to visitors in the event of slips, trips, or disorientation. Historic photography showing handrails associated with similar entryways has been provided as part of this document. The addition of handrails to the proposed ramps will significantly increase safety, and the ramps will be designed in a manner that does not detract from the historic character of a Manhattan Project building.

The use of heavy equipment and the addition of soil will likely be a necessary requirement in order to obtain the proper 1:12 slope of the ADA ramp. Adjusting the grade in the area immediately around the Slotin Building presents the possibility to affect buried historic cultural deposits. Secretary of Interior qualified archaeologists will be on site to monitor all activities disturbing the soil. Although cavate sites are near the area of disturbance, the likelihood of disturbing intact pre-contact cultural deposits is considered low due to the fact that the soils were heavily disturbed during the Manhattan Project and Cold War time periods.

Removal of the asphalt paving will help return historic character to the site. Also, the asphalt currently accelerates drainage over the surface of the site, sometimes leading

directly to the building, and impedes moisture absorption through the soil. The addition of crusher fines will detract somewhat from the character, but the use of crusher fines is crucial to protect existing soils from erosion and prevent unstable and unsafe conditions during rain and snow events. Care will be taken to select crusher fines of a color that is similar to that of the surrounding soil in order to minimize visual impact.

Installation of a utility cabinet will change the appearance of the interior of the Slotin Building, especially at the northeast corner. Currently, all of the building's walls are covered in non-period, surface-mounted utility lines. Many of these lines will be removed around the same time as new utilities will be mounted and connected to the building's systems. While the addition of a utility cabinet will take away from the building's character, it will also add to the character by helping hide much of the modernized utilities required to provide guided tours. Along with hiding modern utilities, the cabinet will allow for the restoration and placement of historically accurate doors that help tell the story of the building.

Finding of Effect

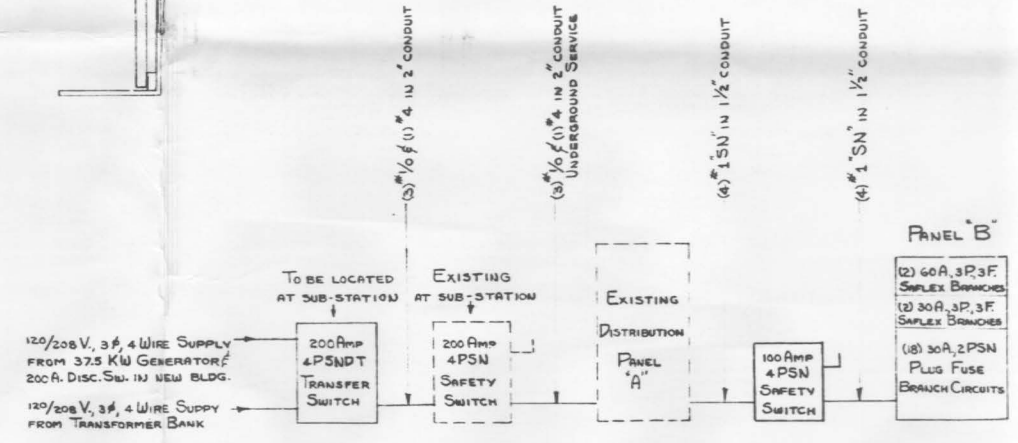
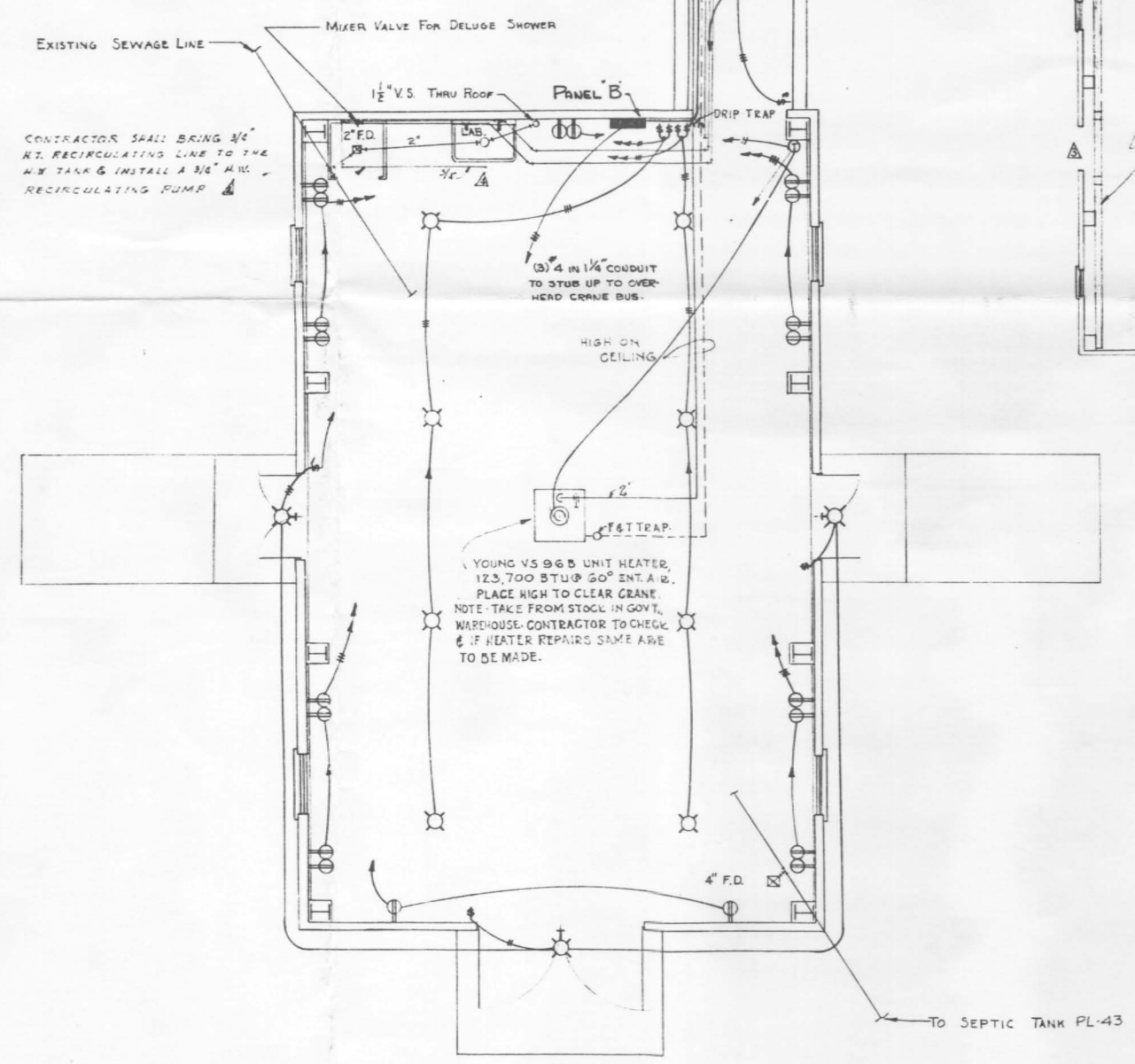
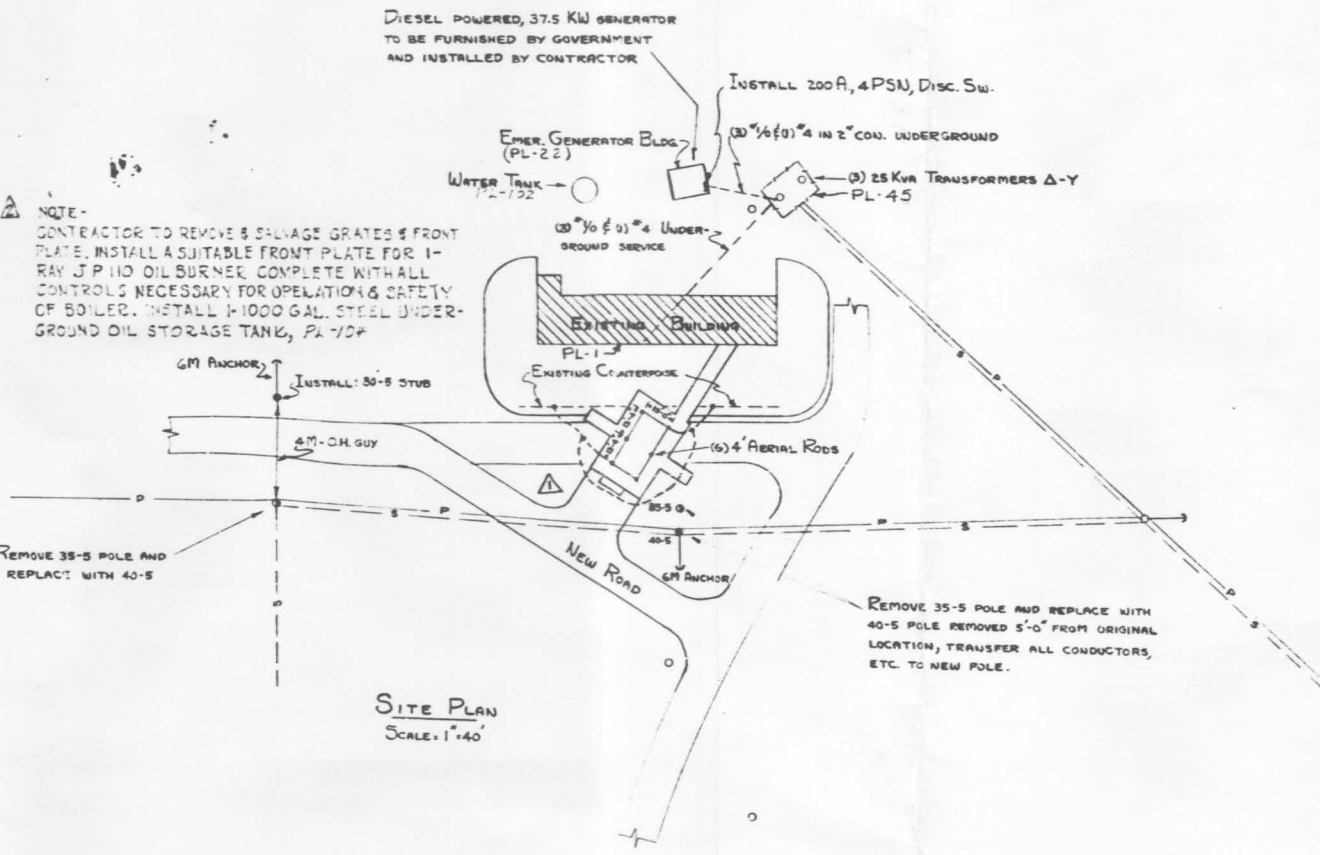
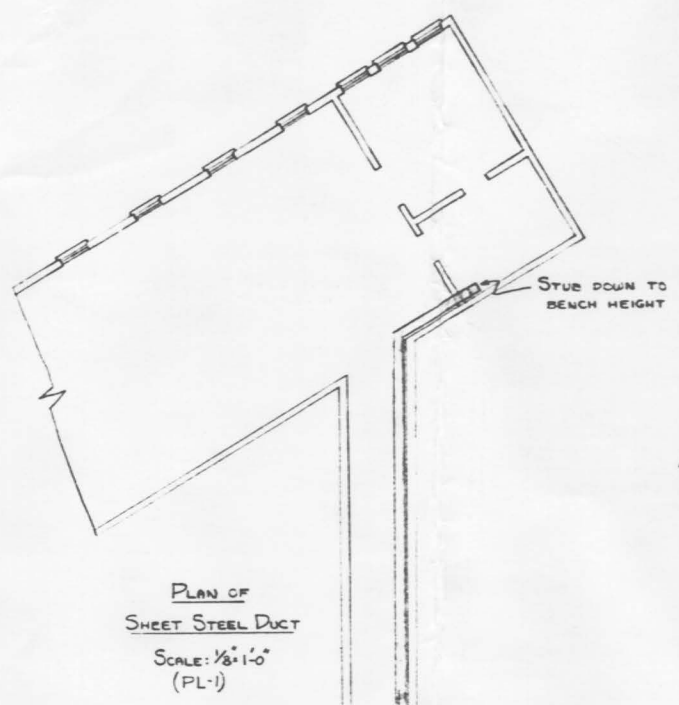
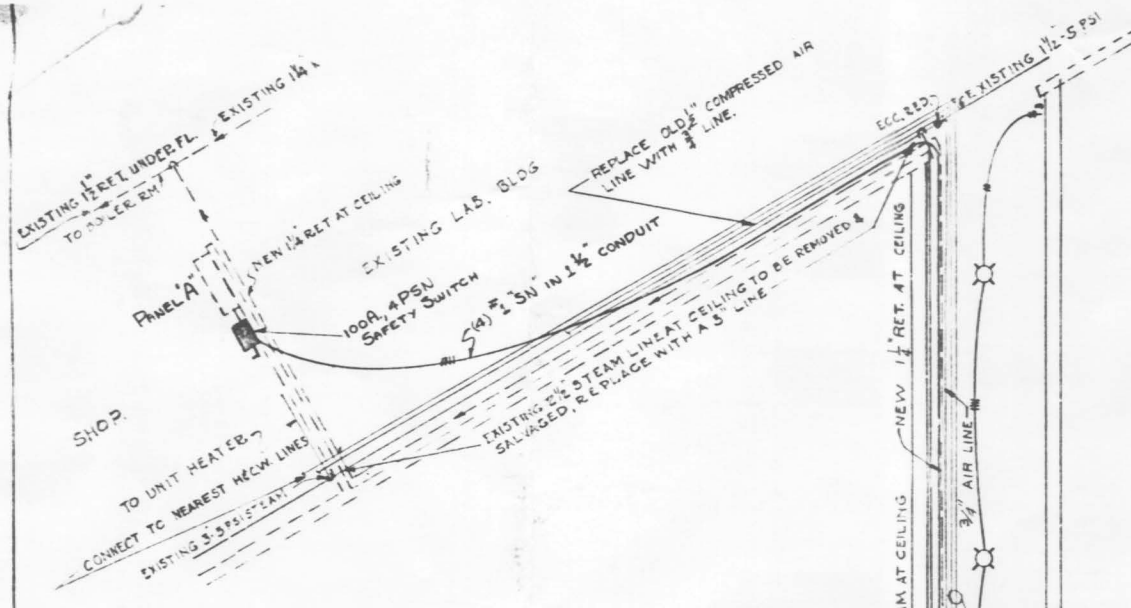
The central story of the building (the Louis Slotin accident) occurred inside, and visitor access to the interior is crucial for telling that story. The new ramps and restored east entry door will improve visitor access. Updated electrical, fire detection, and communication lines are vital to the new function of the Slotin Building as an exhibit. In an effort to conceal many of these new utility lines, a utility cabinet will be intentionally designed to recreate an access point that was present during the building's period of significance. Double doors will be produced that match the design character outlined in the building's original construction drawings. These doors will not only allow access for utility maintenance, but will act as a visual cue for visitors to learn about an important historic function of the building and TA-18 in general. Interpretive resources, such as tour guide prompts and, ultimately, interpretive signage, will offer visitors a way to distinguish the introduced elements presented here from historic elements while presenting the historic significance of the building.

Experienced and qualified staff from LANL's Cultural Resources Program will monitor all construction activities to ensure that the conditions outlined above are met and that the Secretary of the Interior Standards are followed. Members of the Historic Buildings team will be on site to supervise the construction of the ramps and the utility cabinet, while archaeologists will monitor all grading activities for pre-contact and historic resources.

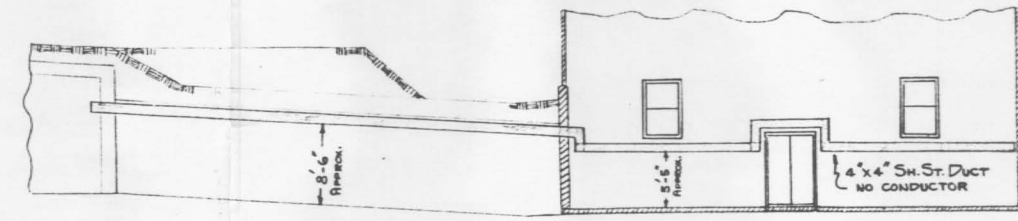
While the proposed scope of work will have a visual effect on the property, these effects result in greater overall historical accuracy while providing improved visitor access and experience.

Enclosure A:

Original Drawings of TA-18-0001 Annex (Slotin Building)



- GENERAL NOTES**
1. CORRIDOR FIXTURES TO BE TYPE J, 100 W, CEILING MTD. WORK ROOM FIXTURES TO BE GE CAT. 690-AL, HIRBY TYPE, 750 W, MTD. 17'-0" ABOVE FLOOR AND SUSPENDED ON 1/2" CON. STEMS. EXTERIOR FIXTURES TO BE 1/2" CONDUIT GOOSE-NECK WITH WEATHER-PROOF SOCKETS AND 12" SHALLOW DOME REFLECTOR, 100 W.
 2. ALL WIRE TO BE #12 IN 1/2" EXPOSED CONDUIT UNLESS OTHERWISE SPECIFIED.
 3. ALL SWITCHES & RECEPTACLES MTD. 4'-6" ABOVE FINISHED FLOOR.
 4. 4"x4" SQUARE D DUCT TO BE INSTALLED WHERE SPECIFIED.

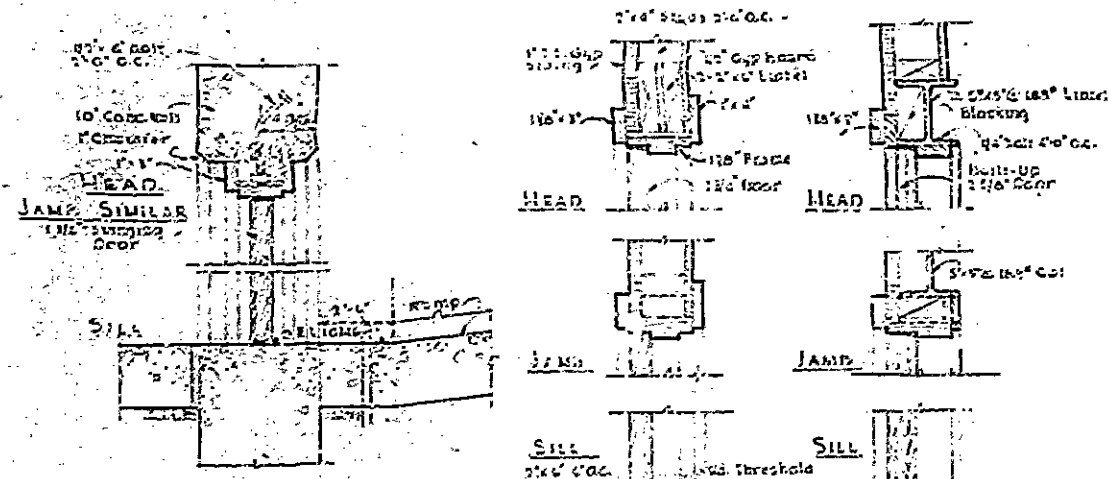


LIGHTING, POWER & PLUMBING PLAN
SCALE: 1/8" = 1'-0"
(PL-1)

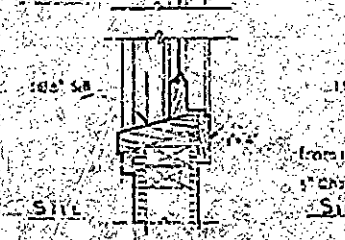
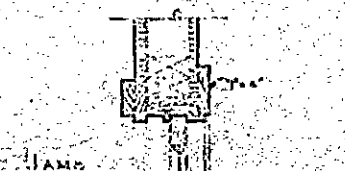
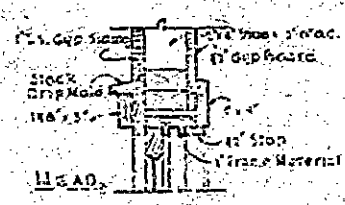
SIDE SECTION
SHEET STEEL DUCT INSTALLATION
SCALE: 1/8" = 1'-0"
(PL-1)

#14742

7-23-52	4	REVISED TITLE	JTH
2-13-46	1	ADDED 1/2" RECIRCULATING LINE & PUMP	3
2-11-46	2	ADDED 1/2" RECIRCULATING LINE & PUMP	4
2-8-46	3	BOILER CHANGED TO OIL FIRED	5
1-10-46	4	LIGHTNING PROTECTION ADDED	6
REVISIONS		BY	APPROV.
U. S. ENGINEER OFFICE SANTA FE, NEW MEXICO			
ADDITION TO Pajarito Laboratory PL-1 Heating, Electrical & Plumbing Plan			
4	SHEETS	SCALE As Noted	SHEET No. 4
OFFICE OF POST ENGINEER		14 JANUARY 1946	
APPROVED BY J. H. K.		APPROVED BY J. H. K.	
APPROVED FOR USING SERVICE J. H. K.		FILE NO. PE 419	



DOOR DETAIL FOR
DOOR TYPE 4B
SCALE 1/4" = 1'-0"



DOOR DETAIL FOR
DOOR TYPE 4A
SCALE 1/4" = 1'-0"

DOOR DETAIL FOR
DOOR TYPE A
SCALE 1/4" = 1'-0"

DOOR DETAIL FOR
DOOR TYPE A
SCALE 1/4" = 1'-0"

DOOR DETAIL FOR
DOOR TYPE A
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DOOR DETAIL FOR
DOOR TYPE A
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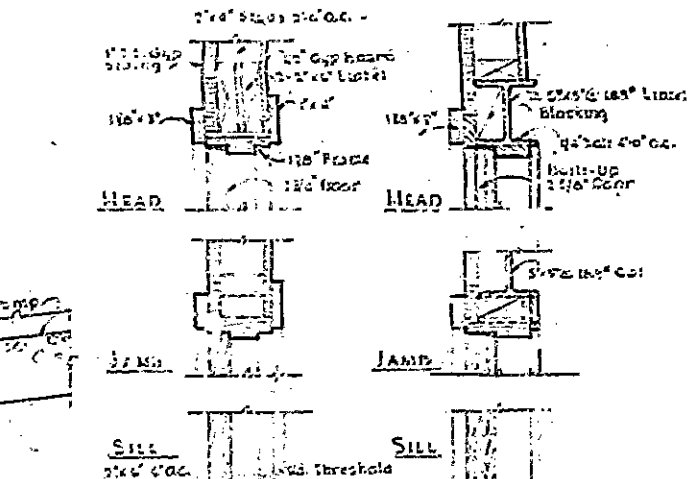
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DOOR DETAIL FOR
DOOR TYPE A
SCALE 1/4" = 1'-0"

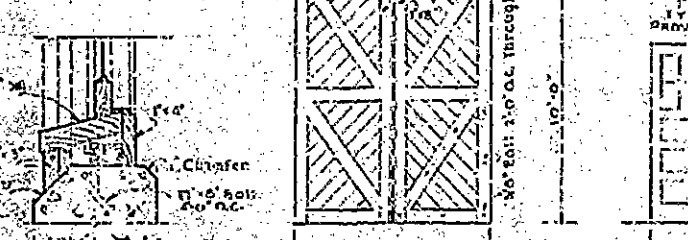
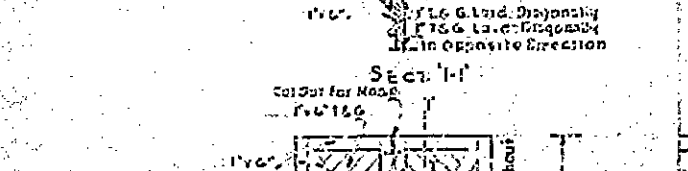
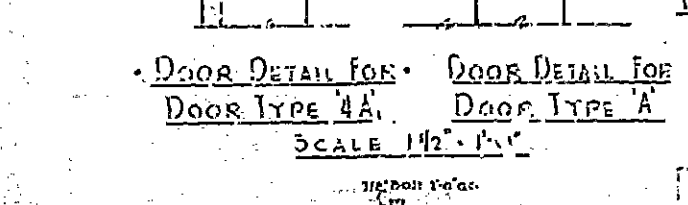
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SCALE 1/4" = 1'-0"

DOOR DETAIL FOR
DOOR TYPE A
SCALE 1/4" = 1'-0"

DOOR DETAIL FOR
DOOR TYPE A
SCALE 1/4" = 1'-0"



WINDOW DETAIL
FOR TYPE E WINDOW
SCALE 1/4" = 1'-0"



WINDOW DETAIL
FOR TYPE E WINDOW
SCALE 1/4" = 1'-0"

WINDOW DETAIL
FOR TYPE E WINDOW
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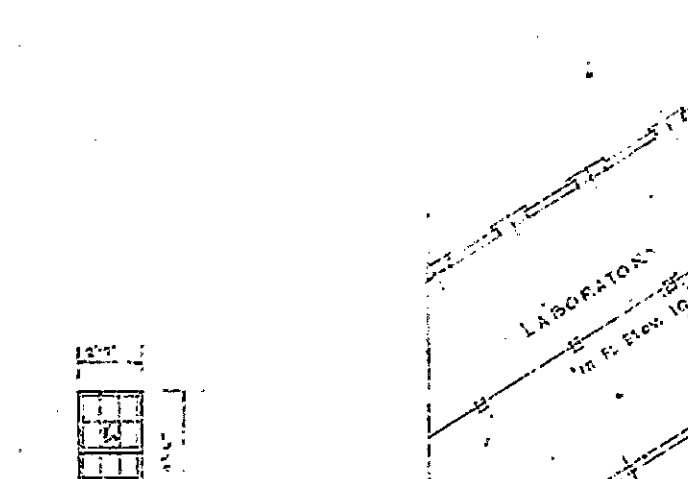
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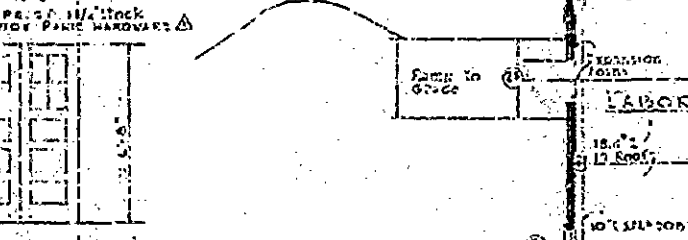
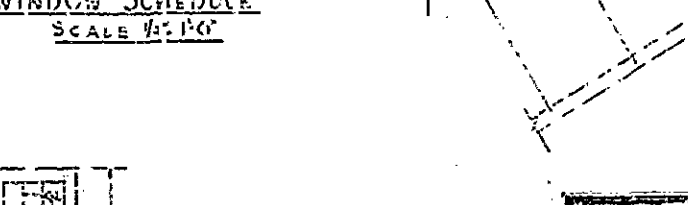
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WINDOW SCHEDULE
SCALE 1/4" = 1'-0"



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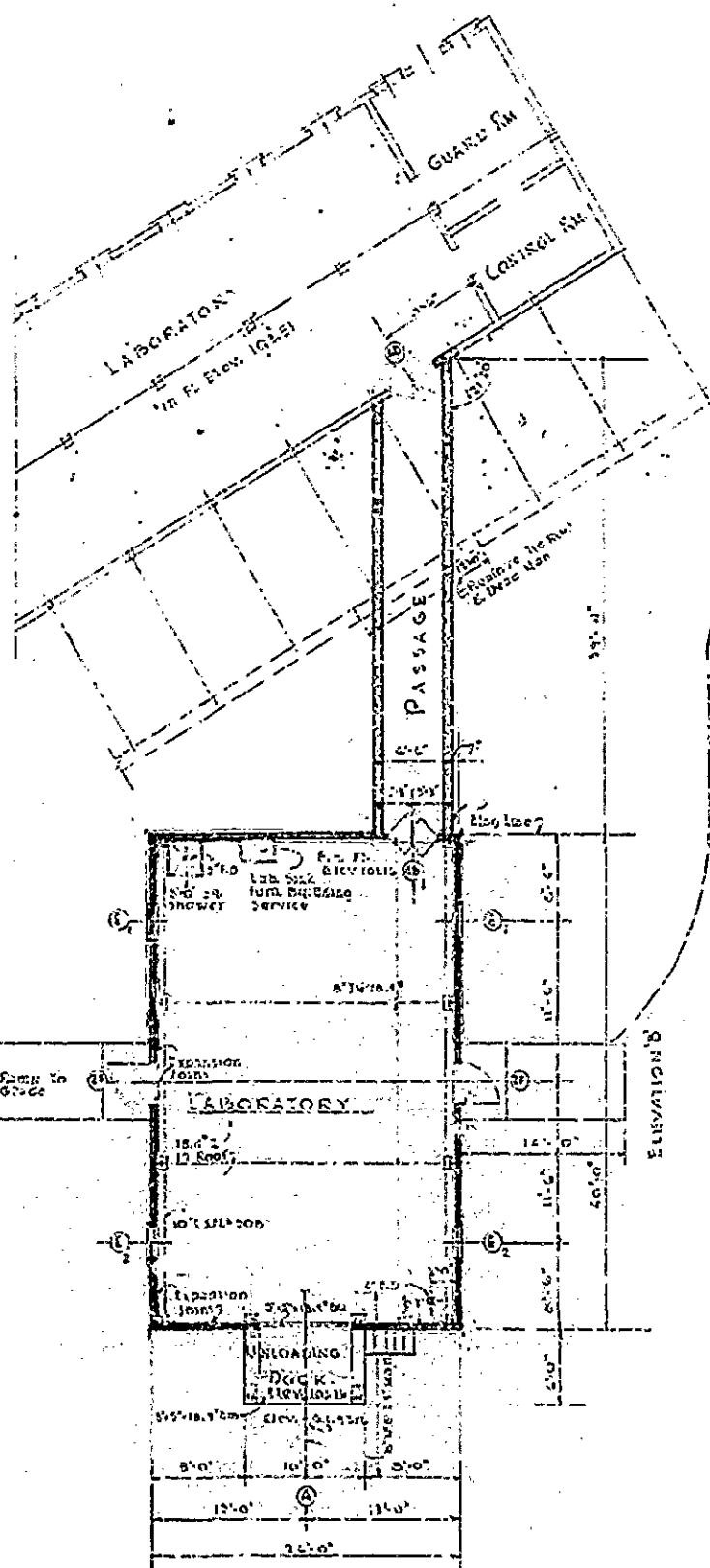
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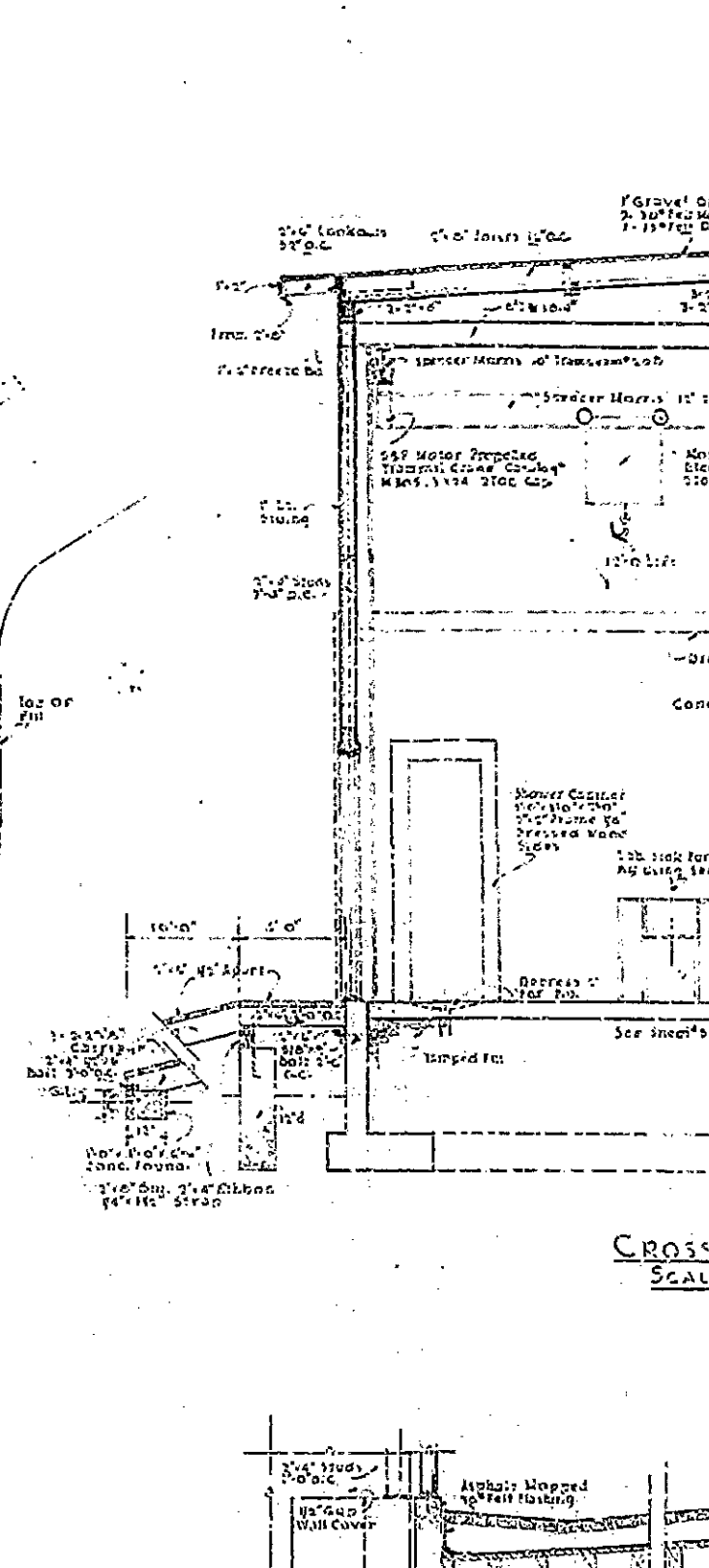
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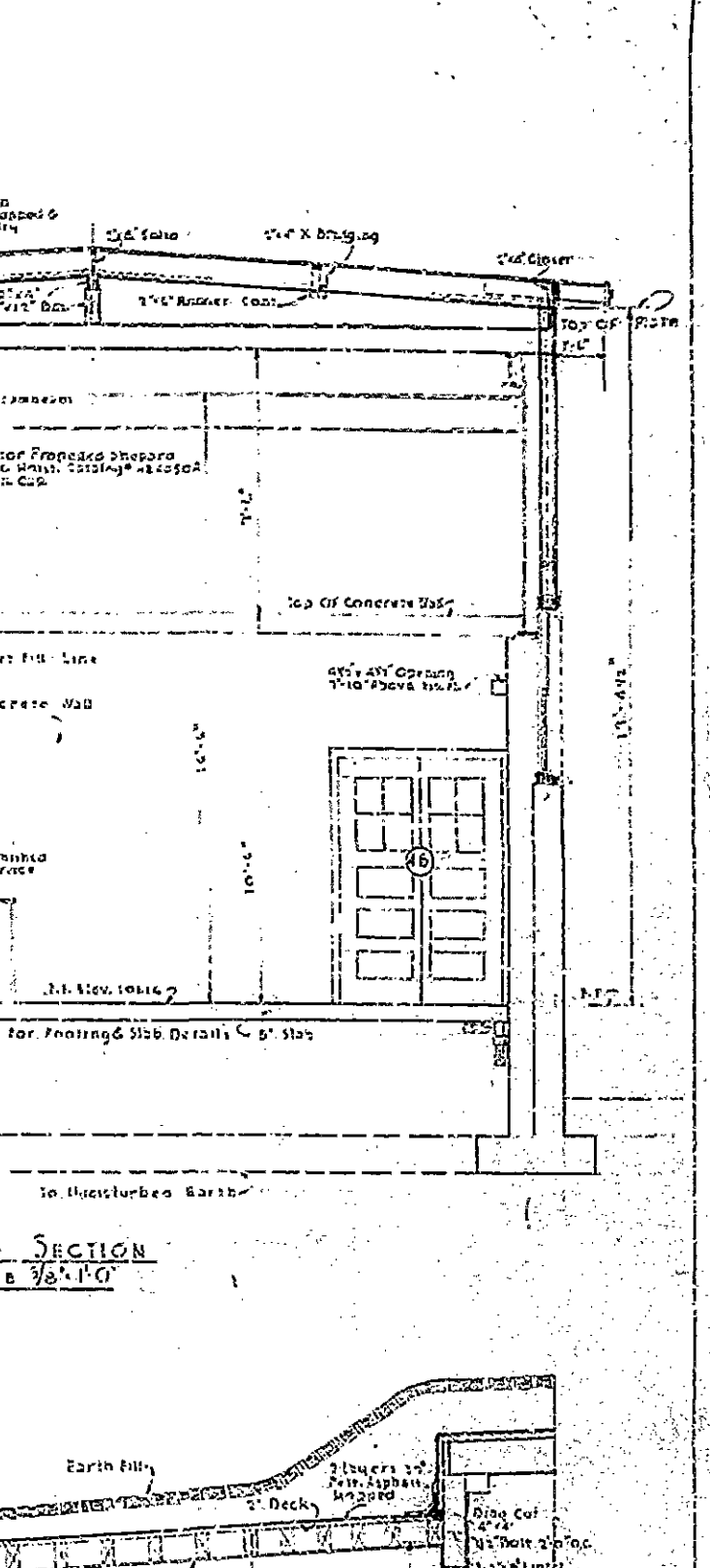
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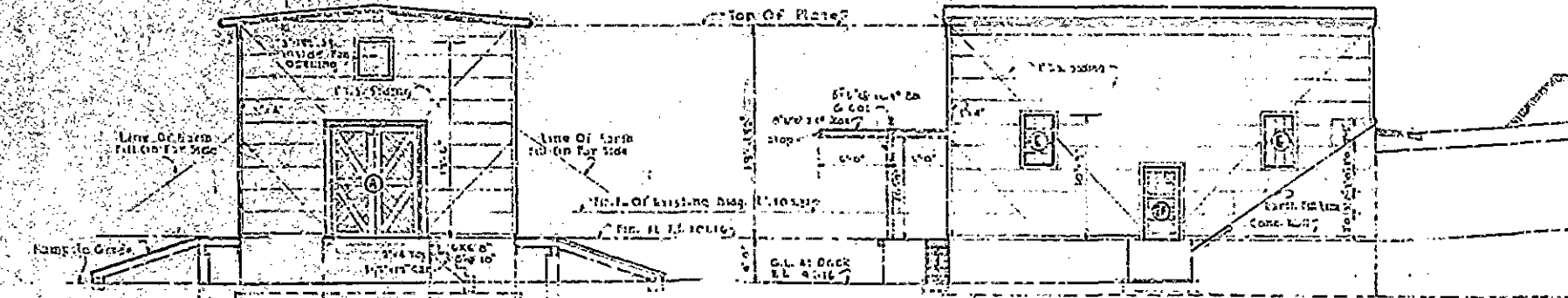
FLOOR PLAN
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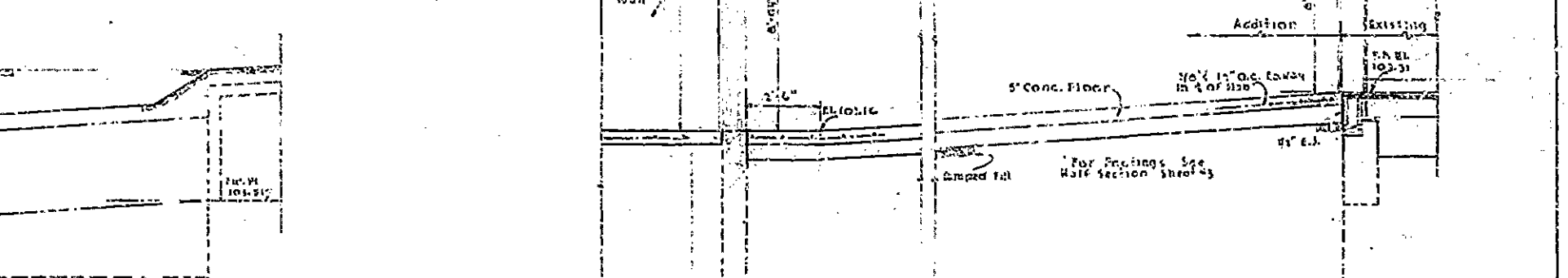
CROSS SECTION
SCALE 3/8" = 1'-0"



SECTION THRU PASSAGE
SCALE 3/8" = 1'-0"



ELEVATION A
SCALE 1/8" = 1'-0"



ELEVATION B
SCALE 1/8" = 1'-0"

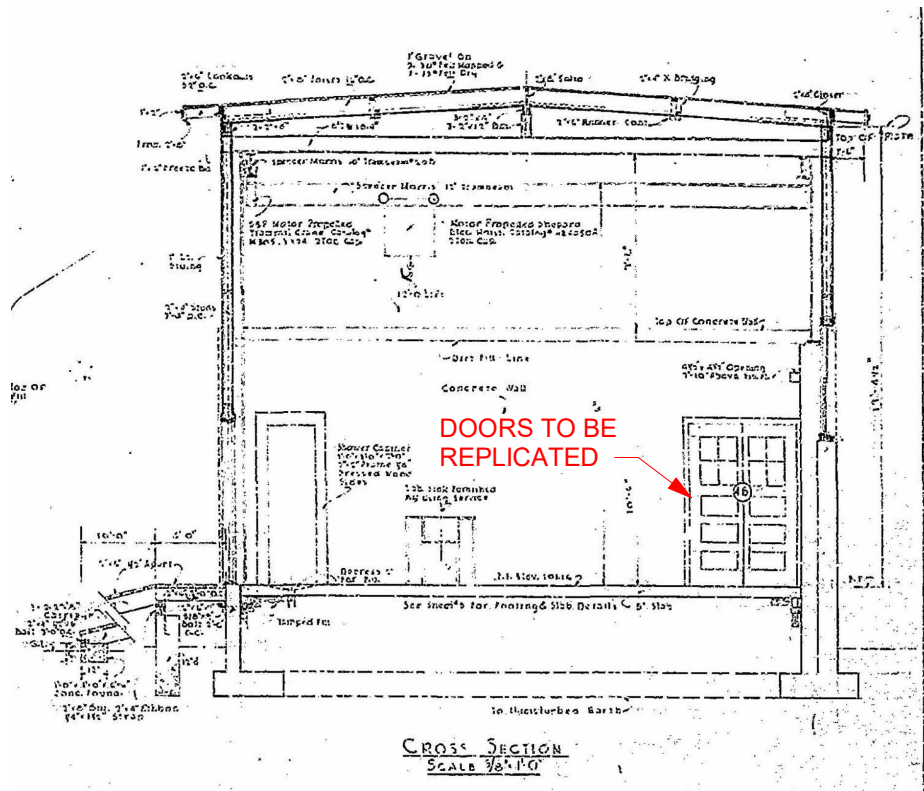
NOTES:
1. PAINT EXTERIOR TRIM TWO COATS GREEN.
2. PAINT INTERIOR WALLS & CEILING 100% BOARD OIL COAT PLAT UNITS.
3. PAINT ALL STEEL ONE COAT RED LEAD & 1 COAT STEEL GRAY.
4. PAINT INTERIOR TRIM TWO COATS GRAY.
5. CONCRETE THROUGHOUT TO BE CLASS "B" & BAGS TO A CU. YD.
6. PROVIDE PANIC HARDWARE FOR DOORS TYPE A & B.

U. S. ENGINEER OFFICE SANTA FE, NEW MEXICO		
ADDITION TO PAJARITO LABORATORY PL-1 FLOOR PLAN, ELEVATIONS & SECTIONS		
IN 4 SHEETS	SCALE AS SHOWN	SHEET NO. 2
OFFICE OF PG&T ENGINEER		14 JAN. 1948
SUBMITTED BY <i>Ray H. H. H.</i>	APPROVED BY <i>R. H. H. H.</i>	APPROVED BY <i>R. H. H. H.</i>
DESIGNED BY <i>R. H. H. H.</i>	CHECKED BY <i>R. H. H. H.</i>	RECHECKED BY <i>R. H. H. H.</i>
FILE NO. PE 419		

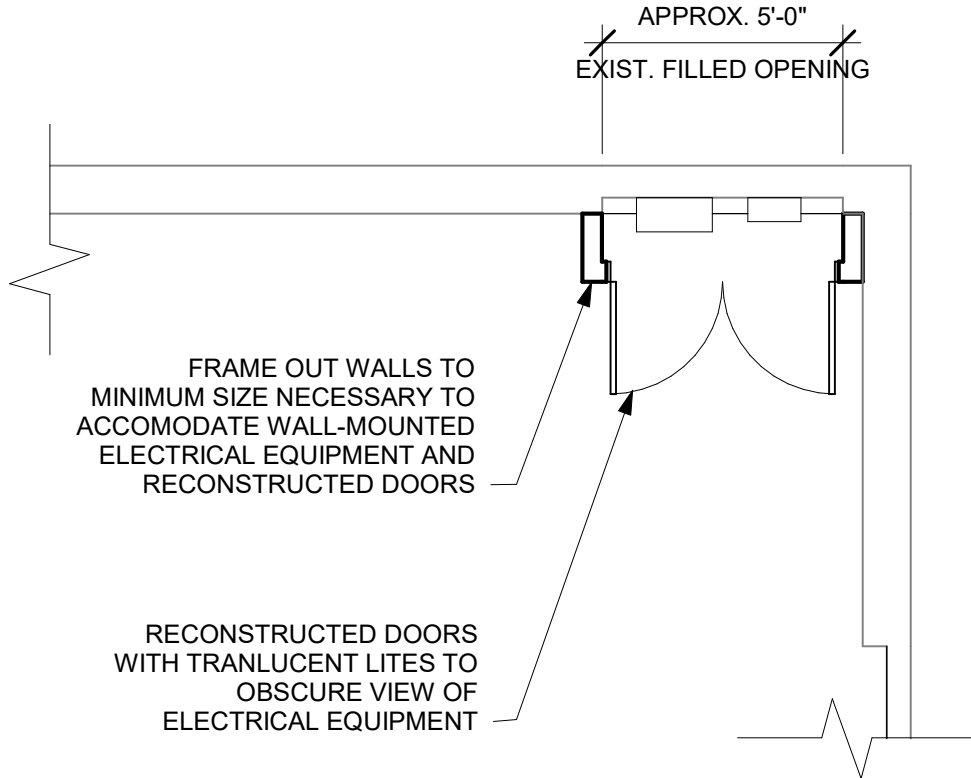
APPROVED FOR USING SERVICE
DATE 1/14/48
L.A.S.L. DWG. NO. ENG-C 12062

Enclosure B:

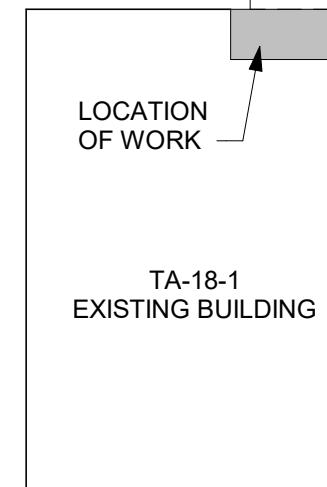
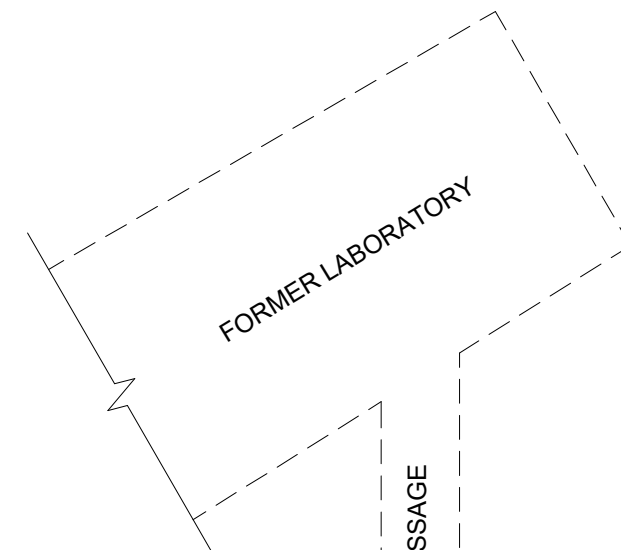
Plan Drawings for Slotin Building Utility Closet and Entrance Ramps



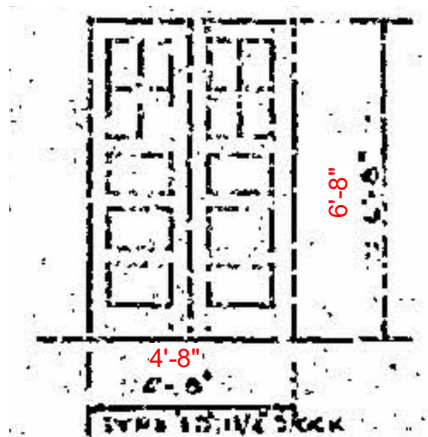
2 SECTION FACING NORTH (FROM DWG. ENG-C 12062)
SK-1 NOT TO SCALE



3 PARTIAL FLOOR PLAN
SK-1 1/4" = 1'-0"



1 LOCATION PLAN
SK-1 1/16" = 1'-0"



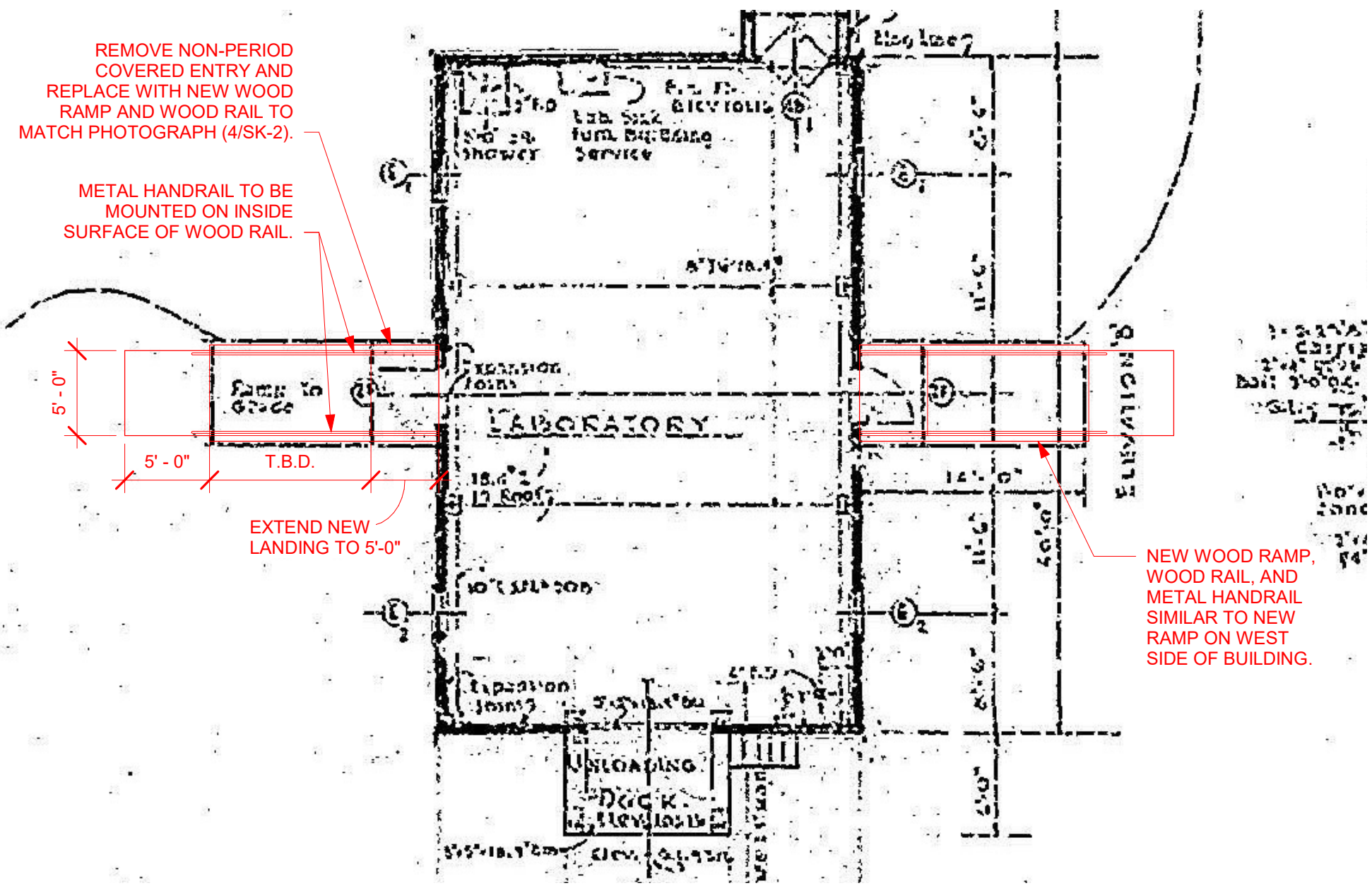
NOTE: DETAILED MEASUREMENTS TO BE VERIFIED IN FIELD USING THE EXISTING FILLED OPENING, HISTORICAL DRAWINGS, AND COMPARABLE HISTORICAL DOORS ON SITE.

4 DOOR SCHEDULE CLIPPING
(FROM ENG-C 12062)
SK-1 1/4" = 1'-0"

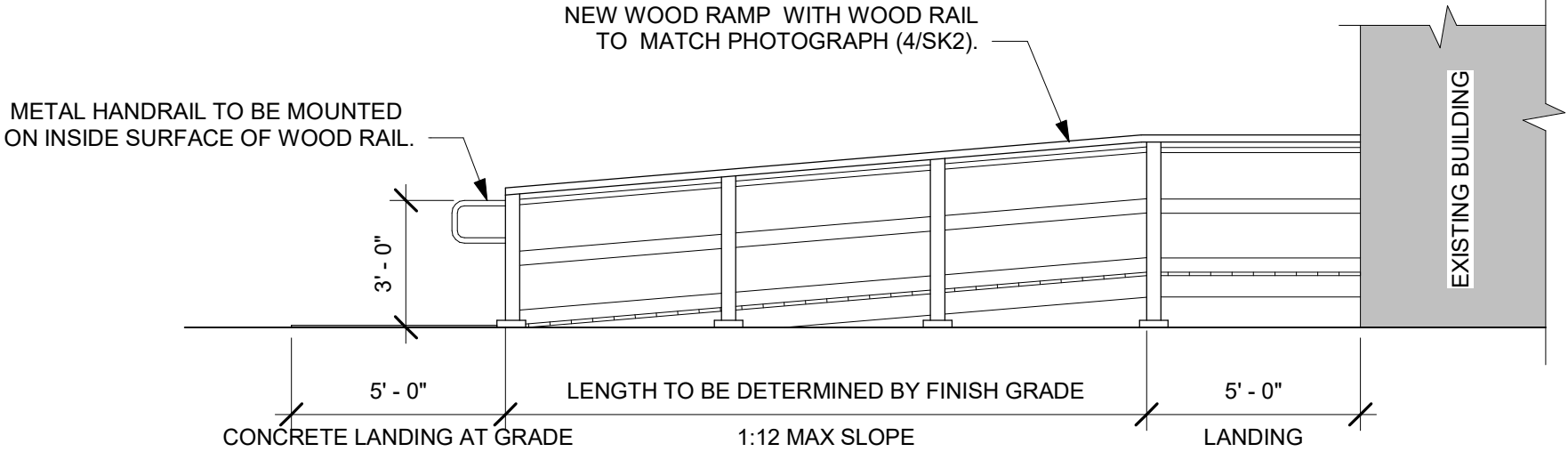


5 3D RENDERING FACING EAST
SK-1 NO SCALE

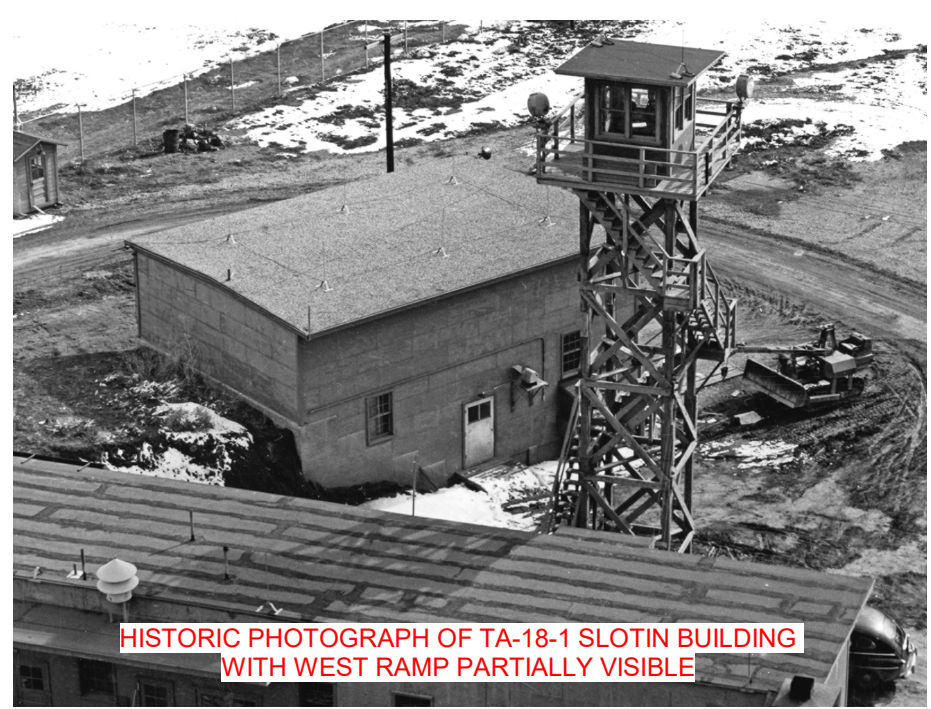
NOTE: NOT INTENDED FOR CONSTRUCTION. FOR REFERENCE ONLY.		
TA-18	SLOTIN BUILDING RESTORATION	DRAWN C. TOWNSEND
		DATE 01/20/2021
	BUILDING 0001	SHEET SK-1
		1 OF 2
Los Alamos NATIONAL LABORATORY EST. 1943		LA-UR
PO BOX 1663 LOS ALAMOS, NEW MEXICO 87545		LA-UR-21-20539



1 FLOOR PLAN CLIPPING FROM ENG-C 12062
SK-2 1/8" = 1'-0"



2 RAMP ELEVATION
SK-2 1/4" = 1'-0"



HISTORIC PHOTOGRAPH OF TA-18-1 SLOTIN BUILDING WITH WEST RAMP PARTIALLY VISIBLE

3 SITE PHOTOGRAPH
SK-2 NO SCALE



BUILDING IN TA-16 CONTEMPORARY TO TA-18-1 SLOTIN BUILDING

4 RAMP AND HANDRAIL PHOTOGRAPH
SK-2 NO SCALE

NOTE: NOT INTENDED FOR CONSTRUCTION. FOR REFERENCE ONLY.

SLOTIN BUILDING RESTORATION		DRAWN	C. TOWNSEND
TA-18		DATE	01/20/2021
BUILDING 0001		SHEET	SK-2
		2 OF 2	
 PO BOX 1663 LOS ALAMOS, NEW MEXICO 87545		LA-UR	LA-UR-21-20539